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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/576,960	05/24/2006	Masahiko Suzuki	P/528-69	2773

2352 7590 08/28/2007
OSTROLENK FABER GERB & SOFFEN
1180 AVENUE OF THE AMERICAS
NEW YORK, NY 100368403

EXAMINER

VERDIER, CHRISTOPHER M

ART UNIT	PAPER NUMBER
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3745

MAIL DATE	DELIVERY MODE
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08/28/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

JP

Office Action Summary	Application No. 10/576,960	Applicant(s) SUZUKI, MASAHIKO	
	Examiner Christopher Verdier	Art Unit 3745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 1-29-07, 6-20-07, 6-21-07.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 7-13 is/are pending in the application.
- 4a) Of the above claim(s) 8-13 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 6-21-07 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>1-29-07</u> . | 6) <input type="checkbox"/> Other: _____ |

Applicant's Amendments dated June 20, 2007 and June 21, 2007 have been carefully considered but are non-persuasive. The Replacement Sheet of Drawings containing figures 3a and 3b, while appreciated, is not approved for the reason set forth later below. The Substitute Specification and Abstract dated June 21, 2007 have been entered and overcome the objections thereto set forth in the first Office action. Correction of these matters is noted with appreciation.

Applicant has argued that Evans 4,255,085 does not disclose that the blade 32 includes tilted ends gradually tapering and inclining inwardly towards the main shaft, but rather as shown in figure 3, the tilted ends of the blade incline outwardly from the shaft. This argument is not persuasive. Comparing figure 3 of Evans with the right hand side of figure 1 of the instant application, it is clear that blade 32 includes tilted ends (corresponding to elements 40, 42 in figure 2) that gradually taper and incline inwardly towards the main shaft 14. Concerning Applicant's argument that Evans does not show the blade chord length being in the amended range of 45-55% of a radius of revolution of the blades, the examiner agrees. However, Dereng 4,264,279 teaches that in the wind turbine, the blade chord length is 30 to 40 percent of the radius of revolution of the blades, and teaches that this is a result-effective variable that controls speed and torque, and it would be obvious to a person of ordinary skill in the art to optimize this value.

Drawings

The drawings filed June 21, 2007 are objected to under 37 CFR 1.84(u)(1) because figures 3a and 3b are not each preceded by an Arabic numeral (i.e. FIG. 3(a) and FIG. 3(b)).

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Election/Restrictions

Newly submitted claims 8-13 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons:

Claim 8 is directed to a plurality of the vertically elongated blades, the vertically elongated blades arranged vertically in a plurality of levels, with the vertically elongated blades not overlapping vertically. Claim 9 is directed to a bearing positioned on the vertical main shaft at each of the plurality of levels. Claim 10 is directed to a plurality of levels each comprising the vertically elongated blade and the support arm being vertically stacked to form a shaft-

Art Unit: 3745

installation section, with the plurality of the shaft-installation sections arranged in different angular directions. Claim 11 is directed to a plurality of levels each comprising the vertically elongated blade and the support arm being vertically stacked, a bearing positioned between at least two of the plurality of levels, and a power generator provided in each of the plurality of levels to generate electricity. Claim 12 is directed to a steel tower for a high voltage power line, the vertical axis windmill being positioned in the steel tower. Claim 13 is directed to a pair of the vertically elongated blades being mounted to the vertical main shaft, one blade of the pair of blades being closer to the main shaft and longer than the other blade of the pair.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 8-13 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Evans 4,255,085 in view of Japanese Patent 63-154,865 and Japanese Patent 2004-204,801 and Dereng

Art Unit: 3745

4,264,279. Evans discloses a vertical axis windmill 10 substantially as claimed, comprising a vertical main shaft 14, a support arm 28 having a first end and a second end, the first end of the support arm being mounted to the vertical main shaft (via element 24), and a vertically elongated blade 32 mounted to the second end of the support arm, the vertically elongated blade having an upper tilted end 40 and a lower tilted end 42, each of the tilted ends gradually tapering and inclining inwardly towards the vertical main shaft.

However, Evans does not disclose a support frame, with the vertical main shaft rotatably mounted to the support frame, does not disclose that each of the tilted ends forms an angle of 30-45 degrees with respect to a vertical axis of the vertical main shaft, and does not disclose that a chord length of the vertically elongated blade is 45-55 % of a radius of revolution of the blade.

Japanese Patent 63-154,865 shows a windmill having a support frame 5, with a vertical main shaft 6 rotatably mounted to the support frame, for supporting the vertical main shaft.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to support the main shaft of the windmill of Evans, with the vertical main shaft rotatably mounted to the support frame as taught by Japanese Patent 63-154,865, since a support frame with a vertical main shaft rotatably mounted to the support frame could be used in combination with a windmill having blades with upper and lower tilted ends to achieve the predictable result of supporting the vertical main shaft of the windmill.

Art Unit: 3745

Japanese Patent 2004-204,801 (figures 1 and 5) shows a vertical axis windmill having vertically arranged long blades 3 around a vertical main shaft 9 with tilted parts 3a, 3a formed on the upper and lower ends of the blades and inclined an angle of 35 to 45 degrees with respect to a vertical axis, for the purpose of providing more efficient rotation of the windmill.

It would have been further obvious at the time the invention was made to a person having ordinary skill in the art to form the modified windmill of Evans such that the tilted part is inclined an angle of 35 to 40 degrees with respect to a vertical axis, as taught by Japanese Patent 2004-204,801, for the purpose of providing more efficient rotation of the windmill.

Dereng (figure 2, column 2, lines 23-25, and column 6, lines 16-22) teaches that a vertical axis windmill with vertically arranged long blades 24 around a vertical main shaft 20 should have a chord length of the blade that is 40% of a radius of rotation of the blades, for the purpose of providing excellent self-starting and increased torque through an intermediate speed range.

It would have been further obvious at the time the invention was made to a person having ordinary skill in the art to form the windmill of Evans such that a chord length of the blade is 45-55% of a radius of rotation of the blades, as taught by Dereng, for the purpose of providing excellent self-starting and increased torque through an intermediate speed range. The recitation of the chord length of the vertically elongated blade being 45-55% of a radius of revolution of the blade is a matter of choice in design. Dereng (column 6, lines 16-22) teaches that the chord

Art Unit: 3745

to rotor diameter ratio is a result-effective variable that influences both speed and torque of the windmill. It would have been obvious to select the ratio of the chord length of the blades to the radius of rotation of the blades to be a specific value, for the purpose of optimizing the speed and torque of the windmill, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Examiner's Comment

In order to place the application in condition for allowance, Applicant should amend claim 7 to recite that each of the tilted ends gradually taper in a vertical direction along the main shaft, and provide a certified English translation of the appropriate priority document in order to remove Japanese Patent 2004-204,801 as a reference (the publication date of which is July 22, 2004). Also note that withdrawn claim 8 depends on canceled claim 1.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

Art Unit: 3745


will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher Verdier whose telephone number is (571) 272-4824. The examiner can normally be reached on Monday-Friday from 10:00-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward K. Look can be reached on (571) 272-4820. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

C.V.
August 24, 2007


Christopher Verdier
Primary Examiner
Art Unit 3745